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Standard talk

Long-term knowledge of home range behaviour of territorial Bearded Vultures in Pyrenees through GPS monitoring: lessons to improve management actions

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Long term studies of threatened species' home range behavior may be very useful to understand the species' resource requirements, assess and predict impacts of human activities. This is the case of the Bearded Vulture (*Gypaetus barbatus*), a threatened species in the Western Palearctic that during the last century has reduced its spatial distribution and population size. The study of the home range behavior of territorial bearded vultures in Pyrenees let us to improve management actions aimed at increasing the distribution of this species and minimizing the risk of metapopulation extinction. To achieve this goal, we conducted a long-term monitoring using GPS tracking devices during 12 years to understand size, stability, sex segregation of home ranges, daily movements, territorial overlap between neighbour pairs, habitat use and effect of health policies. For this purpose, we tracked home range behaviors of 11 territorial bearded vultures occupying 9 different territories using satellite transmitters between 2006 and 2018. Territorial individual exploited home ranges of about 50 km2, characterized by pine forest and pasturelands. Territorials showed high home range stability between years (73% at K95%) with a low overlap with neighbour pairs (0.3% at K50% and 42% at K95%). Daily flight activity was regulated by external factors, as daylight index and season, while internal factors such sex, and breeding status module its flight dynamic. Sex differences in movements were detected, females moving greater distances than males, but being the area used by both individuals similar. Our findings show no differences between annual home range sizes and/or the time used for foraging either before, during or after the imposition of health regulations as consequence of Bovine Spongiform Encephalopathy disease. Our findings will help to develop guidelines for establishing priority areas based on spatial use, and also optimize management and conservation actions for this threatened species.